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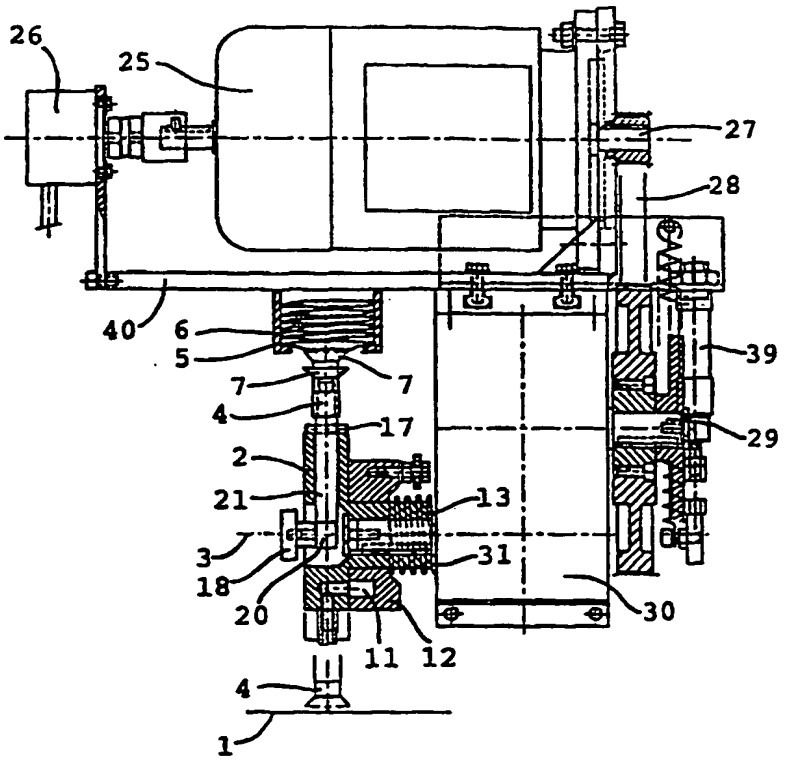
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(54) Title: A DEVICE AND A METHOD FOR AFFIXING OBJECTS TO PRODUCTS

(57) Abstract

A device for affixing objects (6) to products moving in a row, which device is provided with a holder (5) for a stock of said objects (6) and with affixing means (2) comprising a carrier (4) for removing an object (6) from said holder (5) and moving said object (6). The affixing means (2) are capable of rotary movement about an axis of rotation (3), and an object (6) is affixed to the moving product during said rotary movement. The affixing means (2) can be driven intermittently, with rotation and standstill alternating with each other, during which standstill the carrier (4) can remove an object (6) from the holder (5). Preferably, more than one carrier (4) is provided, which carriers are provided with a suction nozzle (7).



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A DEVICE AND A METHOD FOR AFFIXING OBJECTS TO PRODUCTS

The invention relates to a device for affixing objects to products moving in a row, which device is provided with a holder for a stock of said objects and with affixing means comprising a carrier for removing an object from said holder and moving said object, which affixing means are capable of rotary movement about an axis of rotation and of affixing said object to the moving product during said rotary movement.

A device of this kind can for example be used for placing objects, such as product samples, in a magazine. For example, bags of shampoo or bags of soup can be glued to a particular page of a magazine. This can be done when quires of said magazines are joined on a binding machine, whereby said quires move along in a row.

The device may also be used for affixing address labels or other appendices to parcels, for example, before said parcels are enveloped in transparent plastic material.

The device may for example also be used for providing flat sheets, from which a packaging box is to be formed, with stiffening parts which are glued to said flat sheet to form a stiffening element in the box when it is folded at a later stage.

With such a device, it is important that the occurrence of malfunctions is reduced to a minimum, because the affixation of objects by means of such a device forms part of a comprehensive, continuous process, which process can be stopped entirely by a malfunction. Generally, such a device is only suitable for affixing one particular type of object.

The objective of the invention is to provide a device for affixing objects to products moving in a row, wherein different kinds of objects, in particular objects having a three-dimensional shape of other objects which are difficult to handle, can be affixed at a high rate in a reliable manner.

To this end, the affixing means can be driven intermittently, with rotation and standstill alternating with each other, during which standstill the carrier can remove an object from the holder. The temporary standstill of the affixing means enables the carrier to remove an object from the holder in a reliable manner, whilst the rotary movement of the affixing means causes the carrier to move in a circular arc, which is a suitable movement for affixing the objects being taken to products moving in a rectilinear path.

Preferably, the affixing means are provided with more than one carrier, three carriers in a preferred embodiment, wherein the carriers are positioned a substantially uniform distance apart in a circle round the axis of rotation, in such a manner that one carrier is positioned near the holder during standstill of the affixing means, whilst the place where the objects are to be affixed to the products is located at a position on said circle, substantially centrally between two carriers. When three carriers are provided, the carrier which is positioned straight above the affixing means during standstill of the driving means can pull objects from a holder at the underside thereof, whilst a carrier which moves in a circular path, during which movement it can affix an object to a moving product, will be present at the underside of the affixing means during the rotation of the driving means that is carried out in order to place the next carrier in the upper position. It is also possible to place the holder in a position other than straight above the affixing means.

Preferably, a carrier is provided with a suction nozzle, preferably two suction nozzles, for engaging an object. Since the affixing means are at a standstill while said engaging takes place, a sub-atmospheric pressure can be generated in said suction nozzle whilst the object abuts against the nozzle at rest. As soon as a desired sub-atmospheric pressure is available, the object can be pulled from the holder and the affixing means can start to rotate. By making the diameter of the suction nozzle sufficiently large, preferably more than 15 mm, a relatively large engaging force can be effected in a relatively short period. The use of two suction nozzles positioned next to one another makes it possible to effect a very stable engagement.

Preferably, the carrier is movable in radial direction with respect to the axis of rotation, so that the carrier can move during standstill of the affixing means, to a position in which it abuts against an object which is present in the holder, from which position it can pull said object from the holder when the carrier moves in reverse direction.

In one preferred embodiment, the affixing means are provided with more than one carrier, wherein said carriers are positioned a substantially uniform distance apart in a circle round the axis of rotation, wherein the holder on the one hand and the place where the objects are affixed to the products on the other hand are positioned in such a manner with respect to each other, that one carrier will be present at the location of the holder during standstill of the affixing means, and another carrier, which has removed an object from the holder, will not have affixed said object yet. Furthermore, a glue dispenser may be present, which is capable of applying an amount of glue to the object which has been engaged by a carrier. The object can then be glued to the product. Especially if the glue is to be

applied in a specific manner, for example in order to glue the object to the product in a specific manner, it will be advantageous to apply the glue during standstill of the carrier with the object, which can take place whilst another carrier is engaging an object.

During standstill of the affixing means, an object which has been engaged by a carrier can furthermore be provided with a text, a number or other mark or code, for example by means of an inkjet printer. The encoding of objects in this manner may be considered to constitute an invention by itself.

Preferably, the device is provided with its own electric driving motor, and it is preferred not to have the device driven by the same driving means that move the products. This makes it possible to use the device in a flexible manner, in particular with regard to the location at which the device is installed. Preferably, the rotational speed of the driving motor is controlled on the basis of signals from a pulse generator, which signals are a measure for the speed of movement of the products. Such a pulse generator can be mounted near a rotary shaft of the driving means that move the products, wherein the pulse generator delivers signals which are a measure for the rotational speed of the shaft in question. The rotational speed of the driving motor can be adapted to the speed of movement of the products as desired via electronic control of the driving motor. Thus it is ensured that the rotation of the affixing means and the movement of the products take place in a synchronized manner.

In one preferred embodiment, control means are present, which are capable of putting a carrier temporarily out of action, so that said carrier will not engage an object from the holder during standstill at the holder. This makes it possible to select whether or not to affix an object to a product, for example when a product is

missing in the row of moving products, without interfering with the movement of the affixing means.

In another embodiment, control means are present, which control means are provided with detection means, which detect that a moving product is approaching the affixing means. The rotation of the affixing means can be controlled in such a manner that a rotation is started when a product is approaching, whilst the approach of a next product is awaited during standstill.

By using the device it becomes possible to control and/or adjust the speed of motion of the object during rotation on the one hand and the time span between two successive affixing moments of an object on the other hand independently of each other.

In one preferred embodiment, the affixing means are driven via an index mechanism, whose outgoing shaft is intermittently stationary, whilst the ingoing shaft rotates continuously. Such an index mechanism, which is known per se, is commercially available. Preferably, the ingoing shaft of the index mechanism also drives a driving mechanism for driving parts of the device, for example the carrier, during standstill of the affixing means, so that the carrier can move during standstill of said outgoing shaft. Thus, the movement of the carrier can take place at precisely the right moment during standstill of the affixing means.

To that end, the ingoing shaft of the index mechanism is preferably provided with a cam disc, against which a cam abuts, which cam is provided on a driving mechanism for driving parts of the carrier during standstill of the affixing means. The cam may be provided on a lever which is rotatable about a shaft, whereby rotation of said shaft causes the carrier to move.

Preferably, said driving mechanism comprises a lever which is rotatable about a shaft, which lever is provided with a cam, whose movement causes the carrier to move.

The invention furthermore relates to a method for affixing objects to products moving in a row, whereby an object is removed by affixing means from a holder of a stock of objects and subsequently moved by said affixing means to a position in which it abuts against a moving product, whilst the affixing means are rotated about an axis of rotation, at such a speed that the speed of movement of the object is substantially equal to the speed of movement of the product, wherein the affixing means are driven intermittently, with rotation and standstill alternating with each other, during which standstill the affixing means remove an object from the holder. The speed at which said affixation takes place is higher than 5,000 objects per hour thereby, preferably higher than 10,000 objects per hour.

The affixing means can thereby be driven via an index mechanism, the outgoing shaft of which is intermittently stationary, whilst the ingoing shaft rotates continuously, wherein said ingoing shaft can also drive a driving mechanism, which drives parts of the device, for example the carrier, during standstill of the affixing means.

Further aspects of preferred embodiments will be described by means of an example and be defined in the claims.

In order to provide a better understanding of the invention, an embodiment of a device for affixing objects to moving products will be described hereafter with reference to the drawing.

Figure 1 is a side view of the device.

Figure 2 is a front view of the device.
Figure 3 is a rear view of the device; and
Figure 4 is a plan view of the device.

The figures are merely diagrammatic representations, wherein certain parts have been left out in each figure so as to show other parts more clearly.

Figure 1 is a side view of the machine, that is, the machine is shown in the direction of movement of the row of products. The path in which the products move lies near line 1. Present above said path 1 are affixing means 2, which rotate about axis of rotation 3. The affixing means 2 are provided with three carriers 4, which are positioned relative to each other as shown in Figure 2.

Present above the affixing means 2 is a holder 5, in which a stack of objects 6 is present, for example a stack of bags of shampoo. Said holder 5 is only shown in Figure 1. Figure 1 furthermore shows a radial, upward movement of carrier 4, which makes it possible to move nozzle 7 in abutment with the lowermost object 6 in holder 5. When suction nozzle 7 abuts against the lowermost object 6, a sub-atmospheric pressure can be generated in said suction nozzle, as a result of which the lowermost object 6 can be pulled from holder 5 when carrier 4 moves downwards to its starting position.

Figure 2 shows how the affixing means 2 can rotate through an angle of 120° in order to move the next carrier 4 to the upper position, from where said next carrier 4 can take along an object 6 from holder 5. Then the affixing means are rotated further through 120°, whereby the object 6 that was take along first is affixed to a product moving in path 1 in the direction indicated by arrow 8. The sub-atmospheric pressure is thereby released the moment carrier 4 occupies the lower position.

It will be apparent, that the affixing means 2 rotate through an angle of 120° each time, whereby an object 6 can be affixed to a passing product, whilst affixing means 2 will be stationary for some time after each rotation, wherein a carrier 4 occupies the upper position, engaging an object 6 from holder 5 thereby.

Each carrier 4 is provided with an air hose 9, through which air can be sucked out of nozzle 7 or be supplied to said nozzle 7. To that end, a discharge hose 10 is provided, through which air is sucked out. Discharge hose 10 is in communication with chamber 11, which extends along a circular arc in a stationary housing 12, which is pressed against rotatable affixing means 2 by means of coil spring 13. During rotation, the air hoses 9 are temporarily in communication with chamber 11, and that from the moment the respective carrier 4 occupies the upper position until the moment said carrier 4 occupies the lower position. When carrier 4 passes said lower position, the hose 9 of the carrier 4 in question comes into contact with chamber 14, in which an atmospheric pressure prevails. Also chamber 14 is provided in housing 12, it extends along a circular arc. Chambers 11 and 14 are illustrated in dashed lines in Figure 2, the sectional view of Figure 1 shows chamber 1 and the sectional view of Figure 4 shows chamber 11 as well as chamber 14, whereby said figure also shows chamber 14 to be in communication with the atmosphere.

The circular path on which nozzles 7 are located during rotation of affixing means 2 is illustrated in a chain-dotted line 15 in Figure 2.

Each carrier 4 is provided with a coil spring 16, which retains the carrier in question in its starting position, whereby stop 17 abuts against affixing means 2. Carrier 4 can be moved upwards when occupying its upper position, so that nozzle 7 is placed in abutment with an object 6

in holder 5. Said upward movement is driven by lever 18, which is mounted on shaft 19, whereby a cam 20 of said lever abuts against part 21 of carrier 4. Rotation of shaft 19 causes lever 18 to move upwards, and carrier 4 moves upwards correspondingly, so that suction nozzle 7 can engage an object 6 from holder 5.

Figure 2 shows a glue dispenser 22, by means of which a predetermined amount of glue can be sprayed onto object 6 in order to cause object 6 to adhere to the product which is moving along in path 1. The glue is applied to the object during standstill of the affixing means 2. Instead of a glue dispenser, an inkjet printer may be provided, by means of which a code can be placed on the object.

The device is driven by means of a driving motor 25, whose speed is controlled by means of a speed controller 26 on the basis of signals which indicate the speed of movement of the products in path 1. To that end, speed controller 26 can be connected to a pulse generator (not shown), which is mounted on the driving means of the moving objects.

As is shown in Figure 3, outgoing shaft 27 of driving motor 25 is drivably connected to the ingoing shaft 29 of an index mechanism 30 (Figure 1) by means of a toothed belt transmission 28. Index mechanism 30 comprises an ingoing shaft 29 and an outgoing shaft 31, on which outgoing shaft the driving means 2 are mounted.

The index mechanism which is used in this embodiment is a commercially available product. When ingoing shaft 29 of index mechanism 30 makes on revolution at a substantially constant speed, outgoing shaft 31 will rotate through an angle of 120°, whereby shaft 31 will be stationary for some time and carry out said rotation for some time. The position which is shown in Figures 1 and 2 is the position in which affixing means 2 are stationary.

Ingoing shaft 29 is furthermore provided with a cam disc 35, against which cam 36 abuts (Figure 3). Cam 36 is provided on lever 37, which is attached to shaft 19 and which is pressed against cam disc 35 by means of draw spring 38. Lever 37 is moved upwards with every revolution of ingoing shaft 29, and since lever 37 is connected, via shaft 19, to lever 18 (Figure 2), a carrier 4 is moved upwards by means of cam 20. The control is thereby such that said movement takes place while affixing means 2 are stationary.

In addition, a control element 39 is present, which holds lever 37 in its lowermost position, if desired, so that cam 36 will not follow the surface of the cam disc 35, and carrier 4 will not make an upward movement. Control element 30 is excited when a carrier must not take an object from holder 5, it is preferably pneumatically driven.

The device is furthermore provided with a frame 40, which is preferably mounted on a movable support which is disposed on the floor, in which support frame 40 can be fixed in such a manner that the device will be positioned at a desired location. As a result of that, no additional means are required for attaching the device to another device, and the device can easily be used at varying locations.

The illustrated embodiment of the device is only an example, which is given by way of illustration, several other embodiments of the device are possible.

CLAIMS

1. A device for affixing objects (6) to products moving in a row, which device is provided with a holder (5) for a stock of said objects (6) and with affixing means (2) comprising a carrier (4) for removing an object (6) from said holder (5) and moving said object (6), which affixing means (2) are capable of rotary movement about an axis of rotation (3) and of affixing said object (6) to the moving product during said rotary movement, characterized in that said affixing means (2) can be driven intermittently, with rotation and standstill alternating with each other, during which standstill the carrier (4) can remove an object (6) from the holder (5).

2. A device according to claim 1, characterized in that said affixing means (2) are provided with more than one carrier (4), wherein the carriers (4) are positioned a substantially uniform distance apart in a circle round the axis of rotation (3), in such a manner that one carrier (4) is positioned near the holder (5) during standstill of the affixing means (2), whilst the place where the objects (6) are to be affixed to the products is located at a position on said circle, substantially centrally between two carriers (4).

3. A device according to any one of the preceding claims, characterized in that a carrier (4) is provided with a suction nozzle (7), preferably two suction nozzles (7), for engaging an object (6), which suction nozzle (7) preferably has a diameter of more than 15 mm.

4. A device according to any one of the preceding claims, characterized in that a carrier (4) is

movable in radial direction with respect to the axis of rotation (3).

5. A device according to any one of the preceding claims, characterized in that said affixing means (2) are provided with more than one carrier (4), wherein said carriers (4) are positioned a substantially uniform distance apart in a circle round the axis of rotation (3), wherein the holder (5) and the place where the objects (6) are affixed to the products are positioned in such a manner with respect to each other, that one carrier (4) will be present at the location of the holder (5) during standstill of the affixing means (2), whilst another carrier (4), which has removed an object (6) from the holder (5), will not have affixed said object (6) yet.

6. A device according to any one of the preceding claims, characterized by a glue dispenser (22), which is capable of applying an amount of glue to the object (6) which has been engaged by a carrier (4), preferably substantially during standstill of said affixing means (2).

7. A device according to any one of the preceding claims, characterized in that said device is provided with an electric driving motor (25), whose rotational speed is controlled on the basis of signals from a pulse generator, which signals are a measure for the speed of movement of the products.

8. A device according to any one of the preceding claims, characterized by control means which are capable of putting a carrier (4) temporarily out of action.

9. A device according to any one of the preceding claims, characterized by control means, which are provided with detection means, which detect that a moving product is approaching the affixing means (2).

10. A device according to any one of the preceding claims, characterized in that said affixing means (2) are driven via an index mechanism (30), whose outgoing shaft (31) is intermittently stationary, whilst the ingoing shaft (29) rotates continuously.

11. A device according to claim 10, characterized in that the ingoing shaft (29) of said index mechanism (30) also drives a driving mechanism (35, 36, 37, 19, 18, 20) for driving parts of the device, for example the carrier (4), during standstill of the affixing means (2).

12. A device according to claim 11, characterized in that said driving mechanism (35, 36, 37, 19, 18, 20) can move the carrier (4) during standstill of said outgoing shaft (31).

13. A device according to any one of the claims 10 - 12, characterized in that said ingoing shaft (29) of the index mechanism (30) is provided with a cam disc (35), against which a cam (36) abuts, which cam is provided on a driving mechanism (35, 36, 37, 19, 18, 20) for driving parts of the device, for example the carrier (4), during standstill of the affixing means (2).

14. A device according to claim 13, characterized in that said cam (36) is provided on a lever (37) which is rotatable about a shaft (19), whereby rotation of said shaft (19) causes the respective part of the device, for example the carrier (4), to move.

15. A device according to claim 14, characterized in that said driving mechanism (35, 36, 37, 19, 18, 20) comprises a lever (18) which is rotatable about a shaft (19), which lever is provided with a cam (20), whose movement causes the carrier (4) to move.

16. A method for affixing objects (6) to products moving in a row, whereby an object (6) is removed by affixing means (2) from a holder (5) of a stock of objects (6) and subsequently moved by said affixing means (2) to a position in which it abuts against a moving product, whilst the affixing means (2) are rotated about an axis of rotation, at such a speed that the speed of movement of the object (6) is substantially equal to the speed of movement of the product, characterized in that said affixing means (2) are driven intermittently, with rotation and standstill alternating with each other, during which standstill the affixing means (2) carrier remove an object (6) from the holder (5).

17. A method according to claim 16, characterized in that said affixing means (2) are driven via an index mechanism (30), the outgoing shaft (31) of which is intermittently stationary, whilst the ingoing shaft (29) rotates continuously.

18. A method according to claim 17, characterized in that said ingoing shaft (29) also drives a driving mechanism (35, 36, 37, 19, 18, 20), which drives parts of the device, for example the carrier (4), during standstill of the affixing means (2).

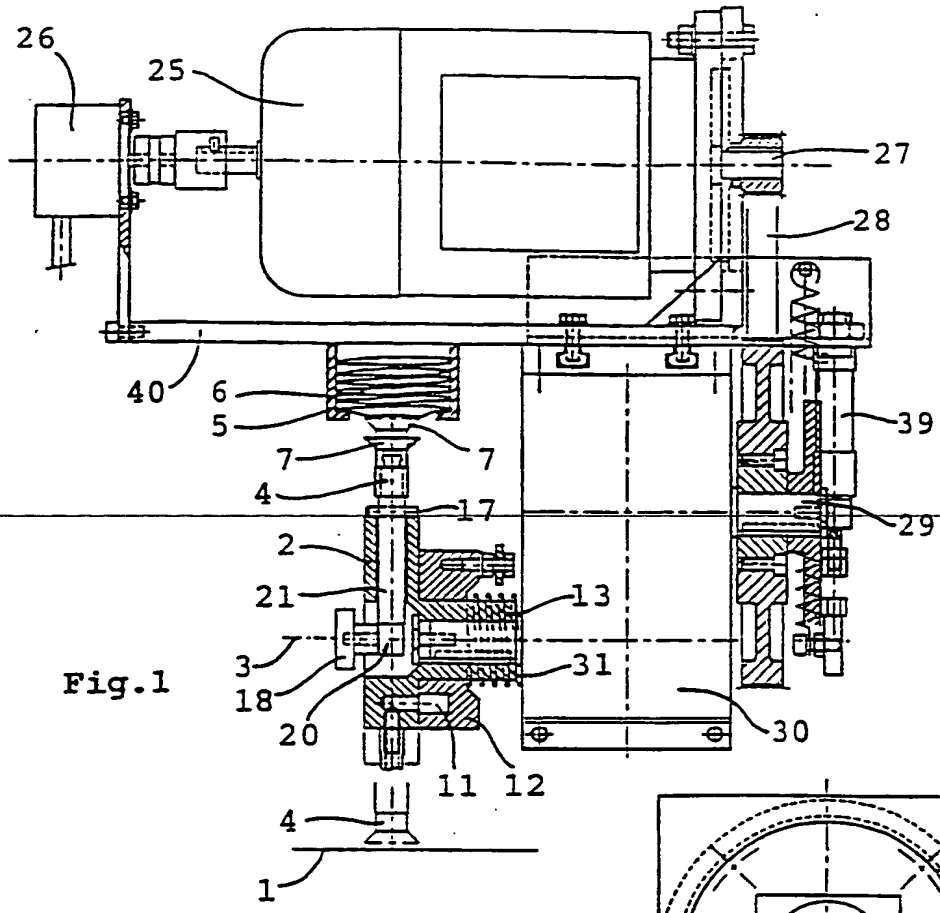

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Fig.1

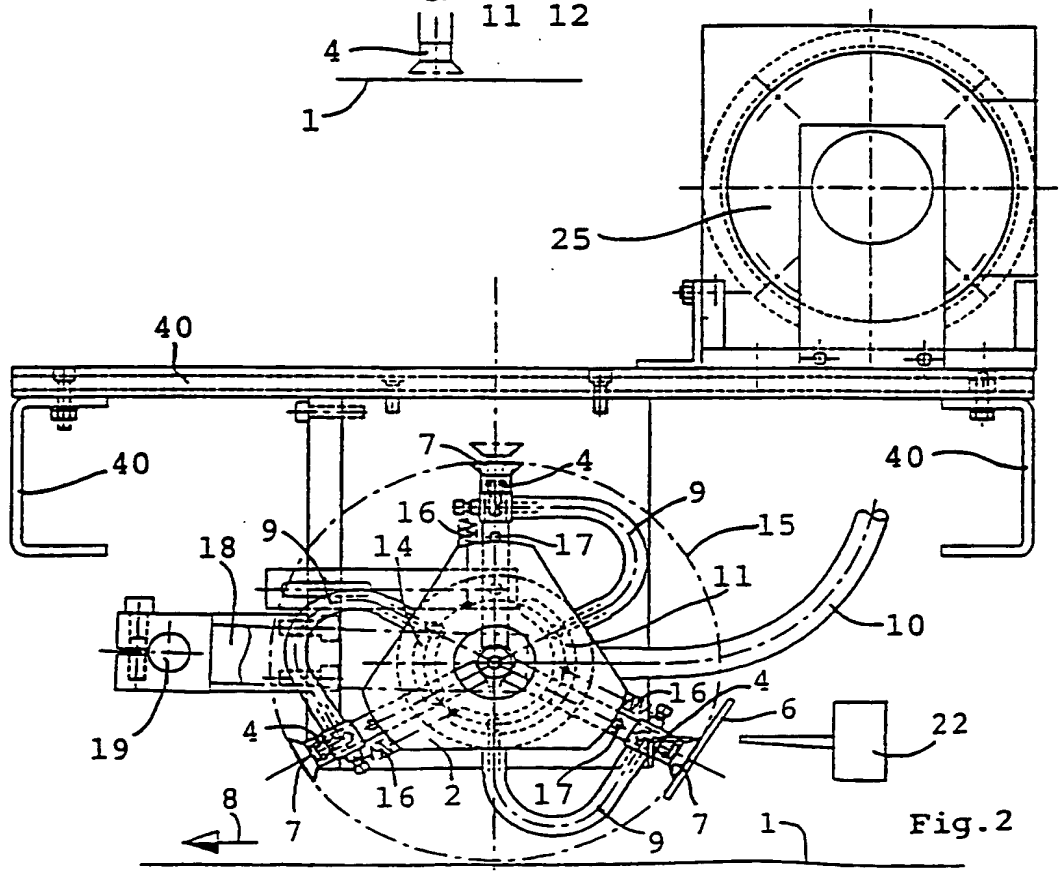

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Fig.2

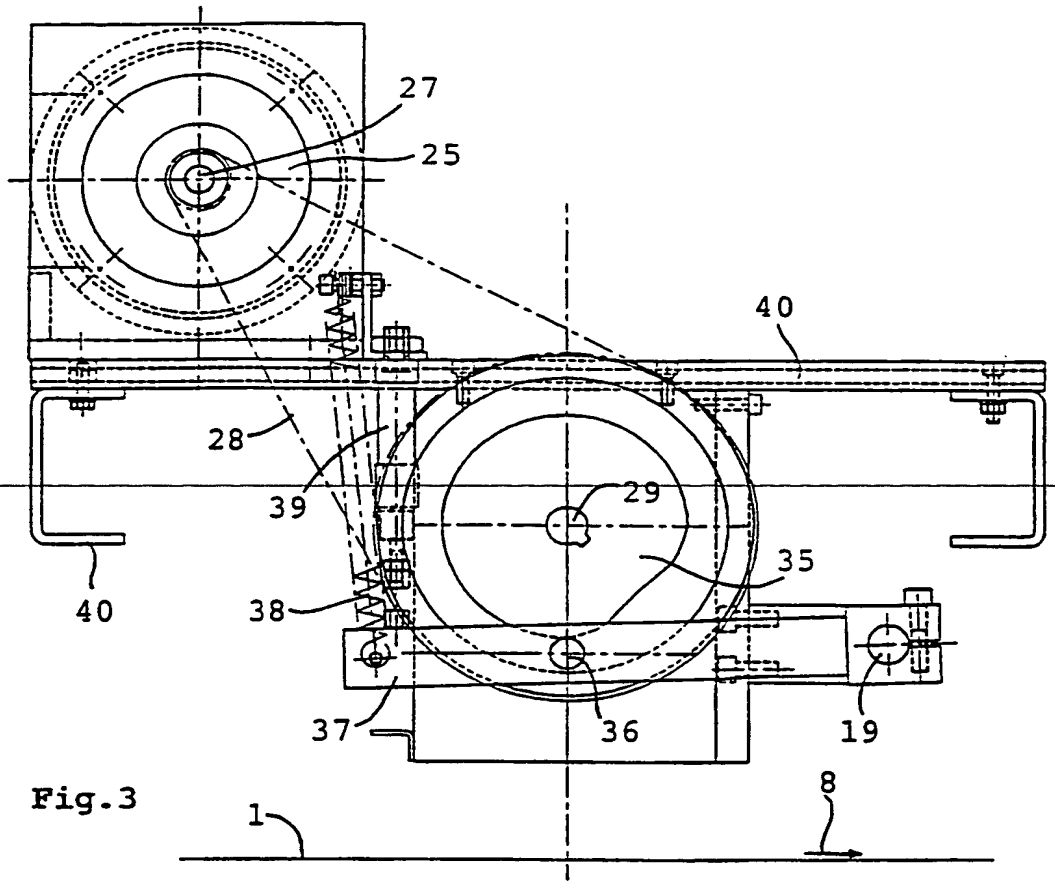

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Fig.3

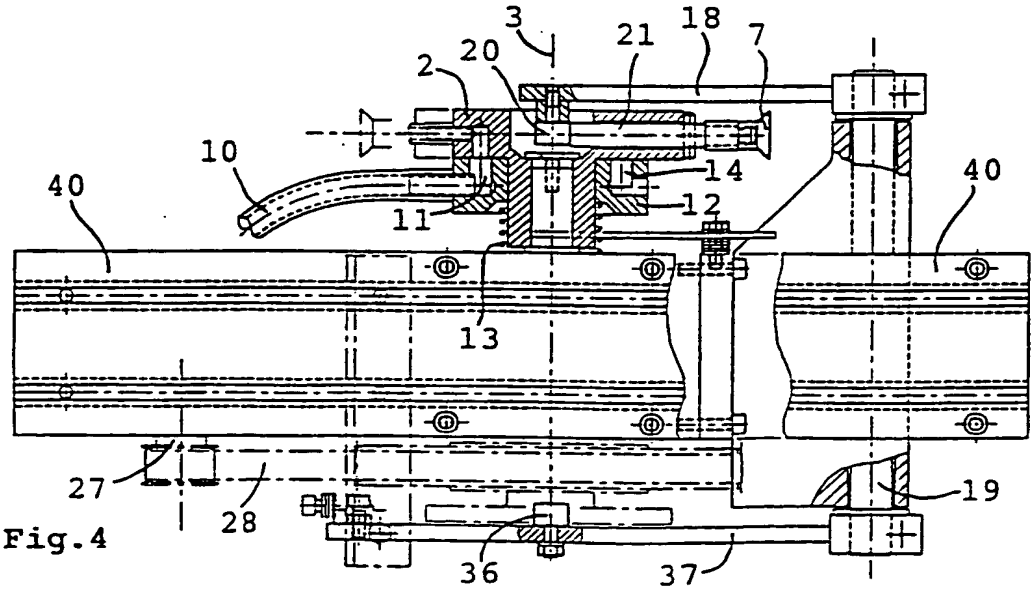

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Fig.4

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	**FOR FURTHER ACTION** see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
V/UM88		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/NL 98/ 00678	01/12/1998	03/12/1997
Applicant		
SMITS, Antonius, Adrianus, Arnoldus		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 03 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. [] **Certain claims were found unsearchable** (see Box I).

2. [] **Unity of invention is lacking** (see Box II).

3. [] The international application contains disclosure of a **nucleotide and/or amino acid sequence listing** and the international search was carried out on the basis of the sequence listing
 - [] filed with the international application.
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 - [X] the text is approved as submitted by the applicant
 - [] the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**
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6. The figure of the **drawings** to be published with the abstract is:
 Figure No. 1
 - [X] as suggested by the applicant.
 - [] because the applicant failed to suggest a figure.
 - [] because this figure better characterizes the invention.
 - [] None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/NL 98/00678

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 B65B61/20

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 B65B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y A	US 4 605 459 A (H. VOLTMER) 12 August 1986 see column 2, line 62 - column 4, line 64; figures --- US 5 241 743 A (G. HUBBS) 7 September 1993 see column 8, line 18 - line 58; figure 5B --- EP 0 035 645 A (TETRA PAK) 16 September 1981 see page 9, line 10 - page 11, line 15; figures --- GB 2 188 608 A (NEW JERSEY MACHINE) 7 October 1987 see page 2, line 60 - line 68; figure 1 see page 4, line 103 - page 5, line 25 --- -/--	1-5,8,16 6,9 10,17 1,2,5,16 6 9 10,17

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
22 February 1999	02/03/1999

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Jagusiak, A

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

International Application No
PCT/NL 98/00678

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	AU 541 100 B (AMERICAN CAN) 13 December 1984 ---	
A	US 5 290 391 A (N. CZECH) 1 March 1994 ---	
A	EP 0 085 895 A (J. GEYSSEL) 17 August 1983 -----	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/NL 98/00678

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4605459 A	12-08-1986	NONE	
US 5241743 A	07-09-1993	AT 174283 T	15-12-1998
		CA 2120747 A	03-03-1994
		DE 69322492 D	21-01-1999
		EP 0608397 A	03-08-1994
		JP 7503441 T	13-04-1995
		US 5412859 A	09-05-1995
		WO 9404308 A	03-03-1994
EP 35645 A	16-09-1981	JP 1196374 C	12-03-1984
		JP 56131139 A	14-10-1981
		JP 58010294 B	25-02-1983
		AU 543743 B	02-05-1985
		AU 6751381 A	27-08-1981
		BR 8101043 A	25-08-1981
		CA 1163541 A	13-03-1984
		US 4384915 A	24-05-1983
GB 2188608 A	07-10-1987	US 4602977 A	29-07-1986
		CH 671200 A	15-08-1989
		DE 3617006 A	26-11-1987
		FR 2596729 A	09-10-1987
		GB 2188607 A,B	07-10-1987
		US 4647333 A	03-03-1987
AU 541100 B	13-12-1984	AU 9045582 A	03-03-1983
US 5290391 A	01-03-1994	AU 5332294 A	24-05-1994
		CA 2148237 A	11-05-1994
		CA 2235971 A	11-05-1994
		WO 9410043 A	11-05-1994
		EP 0665800 A	09-08-1995
		FI 952092 A	27-06-1995
		GB 2286810 A,B	30-08-1995
		GB 2296906 A,B	17-07-1996
		JP 8504709 T	21-05-1996
		MX 9306789 A	31-01-1995
		SE 9501647 A	12-06-1995
		US 5363966 A	15-11-1994
EP 85895 A	17-08-1983	DE 3204011 A	11-08-1983
		AT 25056 T	15-02-1987
		AU 558751 B	05-02-1987
		AU 1117183 A	11-08-1983
		CA 1207576 A	15-07-1986
		US 4584046 A	22-04-1986

INTERNATIONAL SEARCH REPORT

Inter onal Application No
PCT/NL 98/00678

A. CLASSIFICATION OF SUBJECT MATTER
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According to International Patent Classification (IPC) or to both national classification and IPC

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Minimum documentation searched (classification system followed by classification symbols)
IPC 6 B65B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y A	US 4 605 459 A (H. VOLTMER) 12 August 1986 see column 2, line 62 - column 4, line 64; figures	1-5,8,16 6,9 10,17
X	US 5 241 743 A (G. HUBBS) 7 September 1993 see column 8, line 18 - line 58; figure 5B	1,2,5,16
Y	EP 0 035 645 A (TETRA PAK) 16 September 1981 see page 9, line 10 - page 11, line 15; figures	6
Y A	GB 2 188 608 A (NEW JERSEY MACHINE) 7 October 1987 see page 2, line 60 - line 68; figure 1 see page 4, line 103 - page 5, line 25	9 10,17

-/--

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"A" document defining the general state of the art which is not considered to be of particular relevance

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
22 February 1999	02/03/1999

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Jagusiak, A

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Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Inte onal Application No
PCT/NL 98/00678

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	AU 541 100 B (AMERICAN CAN) 13 December 1984 ---	
A	US 5 290 391 A (N. CZECH) 1 March 1994 ---	
A	EP 0 085 895 A (J. GEYSSEL) 17 August 1983 -----	

1

INTERNATIONAL SEARCH REPORT

information on patent family members

Inter onal Application No
PCT/NL 98/00678

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4605459 A	12-08-1986	NONE	
US 5241743 A	07-09-1993	AT 174283 T	15-12-1998
		CA 2120747 A	03-03-1994
		DE 69322492 D	21-01-1999
		EP 0608397 A	03-08-1994
		JP 7503441 T	13-04-1995
		US 5412859 A	09-05-1995
		WO 9404308 A	03-03-1994
EP 35645 A	16-09-1981	JP 1196374 C	12-03-1984
		JP 56131139 A	14-10-1981
		JP 58010294 B	25-02-1983
		AU 543743 B	02-05-1985
		AU 6751381 A	27-08-1981
		BR 8101043 A	25-08-1981
		CA 1163541 A	13-03-1984
		US 4384915 A	24-05-1983
GB 2188608 A	07-10-1987	US 4602977 A	29-07-1986
		CH 671200 A	15-08-1989
		DE 3617006 A	26-11-1987
		FR 2596729 A	09-10-1987
		GB 2188607 A,B	07-10-1987
		US 4647333 A	03-03-1987
AU 541100 B	13-12-1984	AU 9045582 A	03-03-1983
US 5290391 A	01-03-1994	AU 5332294 A	24-05-1994
		CA 2148237 A	11-05-1994
		CA 2235971 A	11-05-1994
		WO 9410043 A	11-05-1994
		EP 0665800 A	09-08-1995
		FI 952092 A	27-06-1995
		GB 2286810 A,B	30-08-1995
		GB 2296906 A,B	17-07-1996
		JP 8504709 T	21-05-1996
		MX 9306789 A	31-01-1995
		SE 9501647 A	12-06-1995
		US 5363966 A	15-11-1994
EP 85895 A	17-08-1983	DE 3204011 A	11-08-1983
		AT 25056 T	15-02-1987
		AU 558751 B	05-02-1987
		AU 1117183 A	11-08-1983
		CA 1207576 A	15-07-1986
		US 4584046 A	22-04-1986

TD

ENT COOPERATION TRE

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Assistant Commissioner for Patents
United States Patent and Trademark Office
Box PCT
Washington, D.C.20231
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 19 August 1999 (19.08.99)	
International application No. PCT/NL98/00678	**Applicant's or agent's file reference** V/UM88
International filing date (day/month/year) 01 December 1998 (01.12.98)	**Priority date** (day/month/year) 03 December 1997 (03.12.97)
Applicant SMITS, Antonius, Adrianus, Arnoldus	

1. The designated Office is hereby notified of its election made:

[X] in the demand filed with the International Preliminary Examining Authority on:

23 June 1999 (23.06.99)

[] in a notice effecting later election filed with the International Bureau on:

2. The election [X] was

[] was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO **34, chemin des Colombettes** **1211 Geneva 20, Switzerland**	Authorized officer F. Baechler
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

Form PCT/IB/331 (July 1992)

2799635

PATENT COOPERATION TREATY

From the:
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:
LOUET FEISSER, A.
ARNOLD & SIEDSMA
Sweelinckplein 1
NL-2517 GK The Hague
PAYS-BAS

PCT

WRITTEN OPINION

(PCT Rule 66)

	Date of mailing *(day/month/year)* 10.09.99
Applicant's or agent's file reference V/UM88	**REPLY DUE** **within 3 month(s)** from the above date of mailing
International application No. PCT/NL98/00678	International filing date *(day/month/year)* 01/12/1998
Priority date *(day/month/year)* 03/12/1997	
International Patent Classification (IPC) or both national classification and IPC B65B61/20	
Applicant SMITS, Antonius, Adrianus, Arnoldus	

1. This written opinion is the **first** drawn up by this International Preliminary Examining Authority.

2. This opinion contains indications relating to the following items:

I	☒	Basis of the opinion
II	☐	Priority
III	☐	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
IV	☐	Lack of unity of invention
V	☒	Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
VI	☐	Certain document cited
VII	☒	Certain defects in the international application
VIII	☐	Certain observations on the international application

3. The applicant is hereby **invited to reply** to this opinion.

When? See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d).

How? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

Also: For an additional opportunity to submit amendments, see Rule 66.4.
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 bis.
For an informal communication with the examiner, see Rule 66.6.

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.

4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: 03/04/2000.

OKT 080
OKT 070
OKT TAX
A
10-12

Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer / Examiner Lawder, M Formalities officer (incl. extension of time limits) Loeper, S Telephone No. +49 89 2399 2569

Form PCT/IPEA/408 (cover sheet) (January 1994)

I. Basis of the opinion

1. This opinion has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed".*):

Description, pages:

1-10 as originally filed

Claims, No.:

1-18 as originally filed

Drawings, sheets:

1/2-2/2 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

3. This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims 1
Inventive step (IS)	Claims
Industrial applicability (IA)	Claims

2. Citations and explanations

se separat sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Item V:

1. The subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

Document D1 (US-A-4 605 459; see fig. 1 and corresponding text) discloses a device for affixing objects 19 to products 20 moving in a row, which device is provided with a holder 32 for a stock of said objects 19 and with affixing means comprising a carrier 21 for removing an object 19 from said holder 32 and moving said object 19, which affixing means are capable of rotary movement about an axis of rotation and of affixing said object 19 to the moving product 20 during said rotary movement.

The use of the wording "can" in the characterising portion of claim 1 introduces ambiguity, such that the features concerning the intermittent rotation of the affixing means and carrier are regarded as being optional.

All the features of claim 1 are therefore known from D1.

1.1 It is suggested that the wording be changed to unambiguously distinguish the subject-matter of claim 1 from the device disclosed by D1. Such an amended claim would be new and inventive in the sense of Article 33(2) and (3) PCT.

2. The subject-matter of independent method claim 16 differs from the method known from D1 in that said affixing means **are** driven intermittently, with rotation and standstill alternating with each other, during which standstill the affixing means carrier remove an object from the holder.

These features are not suggested by any of the documents cited in the search report. The subject-matter of method claim 16 is therefore new and inventive within the meaning of Article 33(2) and (3) PCT.

Item VII:

3. To meet the requirements of Rule 5.1(a)(ii) PCT, the document D1 should be identified in the description and the relevant background art disclosed therein should be briefly discussed.

TENT COOPERATION TR Y

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
V/UM88		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/NL98/00678	01/12/1998	03/12/1997
International Patent Classification (IPC) or national classification and IPC		
B65B61/20		
Applicant		
SMITS, Antonius, Adrianus, Arnoldus		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

 ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

 These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

 - I ☒ Basis of the report
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations suporting such statement
 - VI ☐ Certain documents cited
 - VII ☒ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
23/06/1999	02.03.00
Name and mailing address of the international preliminary examining authority:	Authorized officer
European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Lawder, M Telephone No. +49 89 2399 8465

Form PCT/IPEA/409 (cover sheet) (January 1994)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/NL98/00678

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1-10 as originally filed

Claims, No.:

1-18 as originally filed

Drawings, sheets:

1/2-2/2 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims 2-18
	No:	Claims 1
Inventive step (IS)	Yes:	Claims
	No:	Claims 1-18
Industrial applicability (IA)	Yes:	Claims 1-18
	No:	Claims

2. Citations and explanations

see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Item V:

1. The subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

Document D2 (US-A-5 290 391) discloses a device suitable for affixing objects 11 to products moving in a row, which device is provided with a holder 29 for a stock of said objects 11 and with affixing means comprising a carrier 33 for removing an object 11 from said holder 29 and moving said object 11, which affixing means are capable of rotary movement about an axis of rotation and are capable of affixing said object 11 to the moving product during said rotary movement and that the affixing means can be driven intermittently, with rotation and standstill alternating with each other.
Furthermore, it is also clear that during standstill, the carrier 33 can remove an object 11 from said holder 29.

All the features of claim 1 are therefore known from D2.

1.1 The additional features of claims 2-5 are suggested by D1 (US-A-4 605 459), the additional features of claim 6 are suggested by D3 (EP-A-0 035 645) with the additional features of claim 9 being suggested by D4 (GB-A-2 188 608).
With respect to the available prior art, claims 7 and 8 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step.
Furthermore, the structural features of claims 10-15 come within the scope of normal design practice of the skilled person, and so do also not meet the requirements of the PCT in respect of inventive step

2. The subject-matter of independent method claim 16 does not involve an inventive step in the sense of Article 33(3) PCT.

Document D1 (US-A-4 605 459) discloses a method suitable for affixing objects 19 to products 20 moving in a row, whereby an object 19 is removed by affixing means from a holder 32 of a stock of objects 19 and subsequently moved by said affixing means to a position in which it abuts against a moving product 20, whilst the affixing means are rotated about an axis of rotation, at such a speed that the

speed of movement of the object is substantially equal to the speed of movement of the product.

The subject-matter of independent method claim 16 differs from the method known from D1 in that said affixing means are driven intermittently, with rotation and standstill alternating with each other, during which standstill the affixing means carrier remove an object from the holder.

The objective technical problem to be solved can be regarded as how to enable the carrier to remove an object, having a shape being difficult to handle, in a reliable manner.

Document D2 (US-A-5 290 391) discloses a device suitable for affixing objects to products moving in a row. The device has a carousel (affixing means) 30 provided with suction grasping elements 33 to remove objects 11 from a holder 29.

The skilled person would immediately think to slow down or even stop the affixing means so as to remove safely an object having an awkward shape, and with the device known from D2 having suction grasping elements to directly remove the objects from a holder, even when the carousel is at a standstill, this is obviously feasible.

It would therefore be obvious to the person skilled in the art to apply the features of bringing the affixing means, known from D2, to a standstill such that the carrier is able to remove an awkwardly shaped object from the holder with the method known from D1 in order to solve the problem posed and so arrive at the subject-matter of claim 16 without the use of an inventive step.

2.1 The structural features of claims 17-18 come within the scope of normal design practice of the skilled person, and so do not meet the requirements of the PCT in respect of inventive step.

Item VII:

3. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1 or D2 is not mentioned in the description, nor is this document identified therein.